WHAT IS CLAIMED IS:

1. A liquid crystal display element comprising a liquid crystal layer including liquid crystal contained between a pair of substrates and exhibiting a cholesteric phase, wherein

an orientation film is arranged on at least one of said paired substrates, and is in contact with said liquid crystal layer, and liquid crystal molecular orientation processing for portions of each orientation film corresponding to pixel regions is effected in a manner different from that effected on at least a portion of a portion corresponding to non-pixel region of the orientation film on at least one of the substrates.

2. A liquid crystal display element according to claim 1, wherein

said orientation film arranged on at least one of said substrates is configured such that the liquid crystal molecular orientation processing is effected on the portions corresponding to the pixel regions and at least a portion of the portion corresponding to the non-pixel region in different manners, respectively.

3. A liquid crystal display element according to claim 1, wherein

said orientation film is arranged on each of the substrates.

4. A liquid crystal display element according to claim 3, wherein

said orientation film arranged on each of said substrates is configured such that the liquid crystal molecular orientation processing is effected on the portions corresponding to the pixel regions and at least a portion of the portion corresponding to the non-pixel region in different manners, respectively.

5. A liquid crystal display element according to claim 1, wherein

said orientation film having the portion corresponding to said non-pixel region and subjected to the orientation processing is configured such that said orientation processing is not effected on the portions corresponding to the pixel regions of said orientation film, and the orientation processing is effected on at least a portion of the portion corresponding to the non-pixel region.

6. A liquid crystal display element comprising a liquid crystal layer arranged between a pair of substrates and including liquid crystal exhibiting a cholesteric phase,

and a plurality of pixels, wherein

an orientation film is formed on at least one of the substrates, and liquid crystal molecular orientation processing is effected on at least a portion of a portion corresponding to non-pixel region of the orientation film.

7. A liquid crystal display element according to claim 1, wherein

the orientation processing effected on at least a portion of the portion corresponding to the non-pixel region of said orientation film is performed to set the liquid crystal of the non-pixel region corresponding to the orientation-processed portion to a planar state.

8. A liquid crystal display element formed of a plurality of liquid crystal layers stacked together and each held between a pair of substrates, wherein

at least one of said plurality of liquid crystal layers is provided with an orientation film arranged on at least one of paired substrates holding the liquid crystal layer therebetween and being in contact with the liquid crystal layer, and liquid crystal molecular orientation processing for portions of each orientation film corresponding to pixel regions is effected in a manner different from that effected on at least a portion of a portion corresponding to non-pixel

region of the orientation film on at least one of the substrates.

9. A liquid crystal display element according to claim 8, wherein

said orientation film is employed for each of said liquid crystal layers and is arranged on at least one of the paired substrates holding the liquid crystal layer therebetween, and liquid crystal molecular orientation processing is effected on the orientation film for each of the liquid crystal layers such that said processing is effected on the portions corresponding to the pixel regions in a manner different from that effected on at least a portion of the portion corresponding to the non-pixel region of the orientation film on at least one of the substrates.

10. A liquid crystal display element according to claim 8, wherein

said orientation film arranged on at least one of said paired substrates holding the liquid crystal layer is configured such that the liquid crystal molecular orientation processing is effected on the portions corresponding to the pixel regions and at least a portion of the portion corresponding to the non-pixel region in different manners, respectively.

11. A liquid crystal display element according to claim 8, wherein

said orientation film is arranged on each of surfaces of the substrates opposed to each of the liquid crystal layers.

12. A liquid crystal display element according to claim 1, wherein

said orientation processing of the orientation film is effected by rubbing processing.

13. A liquid crystal display element according to claim 6, wherein

said orientation processing of the orientation film is effected by rubbing processing.

14. A liquid crystal display element according to claim 8, wherein

said orientation processing of the orientation film is effected by rubbing processing.

15. A liquid crystal display element according to claim 1, wherein

said orientation processing of the orientation film is

effected by optical orientation processing.

16. A liquid crystal display element according to claim 6, wherein

said orientation processing of the orientation film is effected by optical orientation processing.

17. A liquid crystal display element according to claim 8, wherein

said orientation processing of the orientation film is effected by optical orientation processing.

/ 18. A liquid crystal light modulation element comprising a liquid crystal layer held between a pair of substrates and including a liquid crystal material exhibiting a cholesteric phase and having a peak of a selective reflection wavelength in a visible wavelength range, wherein

said liquid crystal layer in a selective reflection state has pixel regions neighboring to the opposite substrates, respectively, and liquid crystal domains in the pixel regions neighboring to at least one of said substrates are in a mixed state of a polydomain state and a monodomain state.

19. A liquid crystal light modulation element according to claim 18, wherein,

in the selective reflection state, each of said liquid crystal domains in the pixel regions near the opposite substrates is in said mixed state, and a ratio between the liquid crystal domains taking the polydomain state and the liquid crystal domains taking the monodomain state is different between the liquid crystal domain in each of the pixel regions near one of the opposite substrates and the liquid crystal domain in each of the pixel regions near the other substrate.

20. A liquid crystal light modulation element according to claim 19, wherein,

in the selective reflection state, the liquid crystal domains in each of the pixel regions near the substrate on an element observation side include the liquid crystal domains taking said polydomain state at a higher rate than that on the other side.

21. A liquid crystal light modulation element according to claim 18, wherein,

in the selective reflection state, the liquid crystal domains in each of the pixel regions near one of the opposite substrates take said mixed state and the liquid crystal

domains in each of the pixel regions near the other substrate take only said polydomain state.

22. A liquid crystal light modulation element according to claim 21, wherein

in the selective reflection state, the liquid crystal domains in the pixel regions near the substrate on the element observation side take only said polydomain state.

23. A liquid crystal light modulation element according to claim 18, wherein

an orientation control layer is arranged at least on the substrate opposed to the liquid crystal domains in said mixed state, and particularly on the side of said substrate opposed to said liquid crystal domains, and is in contact with the liquid crystal, and the liquid crystal molecules in said mixed state and the selective reflection state is subjected to the orientation control by the orientation control layer.

24. A liquid crystal light modulation element according to claim 23, wherein

said orientation control is performed by the rubbing processing effected on the orientation control layer arranged on the substrate opposed to the liquid crystal

domains in said mixed state.

25. A liquid crystal light modulation element according to claim 24, wherein

said orientation control layer subjected to the rubbing has a rubbing density of 10 or lower.

26. A liquid crystal light modulation element according to claim 23, wherein

said orientation control is performed by emitting light under predetermined condition(s) to the orientation control layer arranged on the substrate opposed to the liquid crystal domains in said mixed state.

27. A liquid crystal light modulation element according to claim 26, wherein

said predetermined condition(s) include any one of an amount of the emitted light, a substrate temperature, an incident angle of the incident light on the substrate surface.

28. A liquid crystal light modulation element according to claim 26, wherein

said light is ultraviolet light.

29. A liquid crystal light modulation element comprising a liquid crystal layer held between a pair of substrates and including a liquid crystal material exhibiting a cholesteric phase and having a peak of a selective reflection wavelength in a visible wavelength range, wherein

said liquid crystal layer in a selective reflection state has pixel regions neighboring to the opposite substrates, respectively, liquid crystal domains in the pixel regions take a polydomain state, and angles of cholesteric helical axes of the liquid crystal with respect to the substrate normal are different between the liquid crystal domains in the pixel regions near one of the opposite substrates and the liquid crystal domains in the pixel regions near the other substrate.

30. A liquid crystal light modulation element according to claim 29, wherein,

in the selective reflection state, the liquid crystal in the liquid crystal domains in each of the pixel regions near the substrate on an observation side has the cholesteric helical axes defining a larger angle with respect to the substrate normal than that of the liquid crystal in the liquid crystal domains remote from the observation side.

31. A liquid crystal light modulation element according to claim 29, further comprising:

orientation control layers arranged on the sides of said paired substrates opposed to said liquid crystal layer, respectively, and being in contact with the liquid crystal for controlling the angles of the cholesteric helical axes of the liquid crystal in the respective liquid crystal domains of the pixel regions near the opposite substrates with respect to the substrate normal in the selective reflection state.

32. A liquid crystal light modulation element according to claim 31, wherein

a difference occurs in the angle of the cholesteric helical axis of the liquid crystal in the selective reflection state with respect to the substrate normal between the liquid crystal domains in the pixel regions near one of the opposite substrates and the liquid crystal domains in the pixel regions near the other substrate, and said difference is caused by the fact that at least one of the orientation control layers arranged on the opposite substrates is subjected to rubbing.

33. A liquid crystal light modulation element

according to claim 32, wherein

said orientation control layer subjected to the rubbing has a rubbing density of 10 or lower.

34. A liquid crystal light modulation element according to claim 31, wherein

a difference occurs in the angle of the cholesteric helical axis of the liquid crystal in the selective reflection state with respect to the substrate normal between the liquid crystal domains in the pixel regions near one of the opposite substrates and the liquid crystal domains in the pixel regions near the other substrate, and said difference is caused by the fact that at least one of the orientation control layers, which are arranged on the opposite substrates, respectively, is irradiated with light under predetermined condition(s).

35. A liquid crystal light modulation element according to claim 34, wherein

said predetermined condition(s) include any one of an amount of the emitted light, a substrate temperature, an incident angle of the incident light on the substrate surface.

36. A liquid crystal light modulation element

according to claim 34, wherein

said light is ultraviolet light.

37. A liquid crystal light modulation element according to claim 31, wherein

material parameters of the orientation control layers provided for the opposite substrates are different from each other.

38. A liquid crystal light modulation element according to claim 18, wherein,

in the selective reflection state, the angle of the cholesteric helical axis of the liquid crystal in each of the liquid crystal domains of the pixel regions near the opposite substrates with respect to the substrate normal is 20° or less.

39. A liquid crystal light modulation element according to claim 29, wherein,

in the selective reflection state, the angle of the cholesteric helical axis of the liquid crystal in each of the liquid crystal domains of the pixel regions near the opposite substrates with respect to the substrate normal is 20° or less.

40. A multilayer liquid crystal light modulation element formed of a plurality of liquid crystal layers stacked together and each held between a pair of substrates, wherein at least one of said plurality of liquid crystal layers and the corresponding pair of substrates holding the liquid crystal form the liquid crystal light modulation element according to claim 18.

41. A multilayer liquid crystal light modulation element formed of a plurality of liquid crystal layers stacked together and each held between a pair of substrates, wherein at least one of said plurality of liquid crystal layers and the corresponding pair of substrates holding the liquid crystal form the liquid crystal light modulation element according to claim 29.

42. A multilayer liquid crystal light modulation element according to claim 40, wherein,

in any neighboring liquid crystal light modulation elements, an angle of the cholesteric helical axis of the liquid crystal in the liquid crystal domains of each of the pixel regions near the substrate on an observation side in the liquid crystal light modulation element in the selective reflection state on the element observation side with respect to the substrate normal is larger than an angle of

the cholesteric helical axis of the liquid crystal in the liquid crystal domains of each of the pixel regions near the substrate on the observation side in the liquid crystal light modulation element in the selective reflection state on the side opposite to the element observation side with respect to the substrate normal.

43. A multilayer liquid crystal light modulation element according to claim 41, wherein,

in any neighboring liquid crystal light modulation elements, the angle of the cholesteric helical axis of the liquid crystal in the liquid crystal domains of each of the pixel regions near the substrate on an observation side in the liquid crystal light modulation element in the selective reflection state on the element observation side with respect to the substrate normal is larger than the angle of the cholesteric helical axis of the liquid crystal in the liquid crystal domains of each of the pixel regions near the substrate on the observation side in the liquid crystal light modulation element in the selective reflection state on the side opposite to the element observation side with respect to the substrate normal.

44. A multilayer liquid crystal light modulation element according to claim 40, wherein,

in any neighboring liquid crystal light modulation elements, an angle of the cholesteric helical axis of the liquid crystal in the liquid crystal domains of each of the pixel regions near the substrate on a side opposite to an observation side in the liquid crystal light modulation element in the selective reflection state on the element observation side with respect to the substrate normal is larger than an angle of the cholesteric helical axis of the liquid crystal in the liquid crystal domains of each of the pixel regions near the substrate opposite to the observation side in the liquid crystal light modulation element in the selective reflection state on the side opposite to the element observation side with respect to the substrate normal.

45. A multilayer liquid crystal light modulation element according to claim 41, wherein,

in any neighboring liquid crystal light modulation elements, the angle of the cholesteric helical axis of the liquid crystal in the liquid crystal domains of each of the pixel regions near the substrate on a side opposite to an observation side in the liquid crystal light modulation element in the selective reflection state on the element observation side with respect to the substrate normal is larger than the angle of the cholesteric helical axis of the

liquid crystal in the liquid crystal domains of each of the pixel regions near the substrate opposite to the observation side in the liquid crystal light modulation element in the selective reflection state on the side opposite to the element observation side with respect to the substrate normal.

46. A multilayer liquid crystal light modulation element according to claim 42, wherein,

in any neighboring liquid crystal light modulation elements, an angle of the cholesteric helical axis of the liquid crystal in the liquid crystal domains of each of the pixel regions near the substrate on a side opposite to an observation side in the liquid crystal light modulation element in the selective reflection state on the element observation side with respect to the substrate normal is larger than an angle of the cholesteric helical axis of the liquid crystal in the liquid crystal domains of each of the pixel regions near the substrate opposite to the observation side in the liquid crystal light modulation element in the selective reflection state on the side opposite to the element observation side with respect to the substrate normal.

47. A multilayer liquid crystal light modulation

element according to claim 43, wherein,

in any neighboring liquid crystal light modulation elements, the angle of the cholesteric helical axis of the liquid crystal in the liquid crystal domains of each of the pixel regions near the substrate on a side opposite to an observation side in the liquid crystal light modulation element in the selective reflection state on the element observation side with respect to the substrate normal is larger than the angle of the cholesteric helical axis of the liquid crystal in the liquid crystal domains of each of the pixel regions near the substrate opposite to the observation side in the liquid crystal light modulation element in the selective reflection state on the side opposite to the element observation side with respect to the substrate normal.

48. A multilayer liquid crystal light modulation element formed of a plurality of liquid crystal layers stacked together and each held between a pair of substrates, wherein at least one of said plurality of liquid crystal layers and the corresponding pair of substrates holding the liquid crystal forms the liquid crystal light modulation element according to claim 24.

49. A multilayer liquid crystal light modulation

element formed of a plurality of liquid crystal layers stacked together and each held between a pair of substrates, wherein at least one of said plurality of liquid crystal layers and the corresponding pair of substrates holding the liquid crystal forms the liquid crystal light modulation element according to claim 32.

50. A multilayer liquid crystal light modulation element according to claim 48, wherein,

in any neighboring liquid crystal light modulation elements, an angle of the cholesteric helical axis of the liquid crystal in the liquid crystal domains of each of the pixel regions near the substrate on an observation side in the liquid crystal light modulation element in the selective reflection state on the element observation side with respect to the substrate normal is larger than an angle of the cholesteric helical axis of the liquid crystal in the liquid crystal domains of each of the pixel regions near the substrate on the observation side in the liquid crystal light modulation element in the selective reflection state on the side opposite to the element observation side with respect to the substrate normal.

51. A multilayer liquid crystal light modulation element according to claim 49, wherein,

in any neighboring liquid crystal light modulation elements, the angle of the cholesteric helical axis of the liquid crystal in the liquid crystal domains of each of the pixel regions near the substrate on an observation side in the liquid crystal light modulation element in the selective reflection state on the element observation side with respect to the substrate normal is larger than the angle of the cholesteric helical axis of the liquid crystal in the liquid crystal domains of each of the pixel regions near the substrate on the observation side in the liquid crystal light modulation element in the selective reflection state on the side opposite to the element observation side with respect to the substrate normal.

52. A multilayer liquid crystal light modulation element according to claim 48, wherein,

in any neighboring liquid crystal light modulation elements, an angle of the cholesteric helical axis of the liquid crystal in the liquid crystal domains of each of the pixel regions near the substrate on a side opposite to an observation side in the liquid crystal light modulation element in the selective reflection state on the element observation side with respect to the substrate normal is larger than an angle of the cholesteric helical axis of the liquid crystal in the liquid crystal domains of each of the

pixel regions near the substrate opposite to the observation side in the liquid crystal light modulation element in the selective reflection state on the side opposite to the element observation side with respect to the substrate normal.

53. A multilayer liquid crystal light modulation element according to claim 49, wherein,

in any neighboring liquid crystal light modulation elements, the angle of the cholesteric helical axis of the liquid crystal in the liquid crystal domains of each of the pixel regions near the substrate on a side opposite to an observation side in the liquid crystal light modulation element in the selective reflection state on the element observation side with respect to the substrate normal is larger than the angle of the cholesteric helical axis of the liquid crystal in the liquid crystal domains of each of the pixel regions near the substrate opposite to the observation side in the liquid crystal light modulation element in the selective reflection state on the side opposite to the element observation side with respect to the substrate normal.

54. A liquid crystal light modulation element according to claim 50, wherein

in any neighboring liquid crystal light modulation elements, the rubbing density of the orientation control layer subjected to the rubbing and arranged in the liquid crystal light modulation element on the element observation side is smaller than the rubbing density of the orientation control layer, corresponding to said orientation control layer, subjected to the rubbing and arranged in the liquid crystal light modulation element on the opposite side.

55. A liquid crystal light modulation element according to claim 51, wherein

in any neighboring liquid crystal light modulation elements, the rubbing density of the orientation control layer subjected to the rubbing and arranged in the liquid crystal light modulation element on the element observation side is smaller than the rubbing density of the orientation control layer, corresponding to said orientation control layer, subjected to the rubbing and arranged in the liquid crystal light modulation element on the opposite side.

/ 56. A method of producing a liquid crystal light modulation element including a liquid crystal layer held between a pair of substrates and including a liquid crystal material exhibiting a cholesteric phase and having a peak of a selective reflection wavelength in a visible wavelength

range, comprising:

a substrate processing step of processing at least one of said paired substrates such that said liquid crystal layer in the selective reflection state has pixel regions neighboring to the opposite substrates, respectively, and liquid crystal domains in the pixel regions neighboring to at least one of the substrates are in a mixed state of a polydomain state and a monodomain state; and

a step of arranging the liquid crystal layer between the paired substrates including the substrate(s) subjected to said substrate processing step.

57. A method of producing the liquid crystal light modulation element according to claim 56, wherein

said substrate processing step is performed to process the paired substrates such that the liquid crystal domains in the pixel regions near the substrate remote from an element observation side are in said mixed state, and the liquid crystal domains in the pixel regions near the substrate on the element observation side take only the polydomain state in the selective refection state.

58. A method of producing the liquid crystal light modulation element according to claim 56, wherein

said substrate processing step includes a step of

providing an orientation control layer on the side opposed to the liquid crystal domains in said mixed state of at least one of said paired substrates opposed to the liquid crystal domains in the mixed state; and a rubbing processing step of effecting rubbing processing on the orientation control layer arranged on the substrate opposed to said liquid crystal domains in the mixed state, and said rubbing step is performed to provide the orientation control layer rubbed at a rubbing density of 10 or less.

59. A method of producing a liquid crystal light modulation element including a liquid crystal layer held between a pair of substrates and including a liquid crystal material exhibiting a cholesteric phase and having a peak of a selective reflection wavelength in a visible wavelength range, comprising:

a substrate processing step of processing said paired substrates such that the liquid crystal layer in the selective reflection state has pixel regions neighboring to the opposite substrates, respectively, liquid crystal domains in the pixel regions take a polydomain state, and the angles of the cholesteric helical axes of the liquid crystal with respect to the substrate normal are different between the liquid crystal domains in the pixel regions near one of the opposite substrates and the liquid crystal

domains in the pixel regions near the other substrate; and

a step of arranging said liquid crystal layer between said paired substrates subjected to said substrate processing step.

60. A method of producing the liquid crystal light modulation element according to claim 59, wherein

said substrate processing step is performed such that the angle of the cholesteric helical axis of the liquid crystal in the liquid crystal domains of each of the pixel regions near the substrate on an observation side with respect to the substrate normal is larger than the angle of the cholesteric helical axis of the liquid crystal in the liquid crystal domains of each of the pixel regions near the opposite substrate with respect to the substrate normal in the selective reflection state.

61. A method of producing the liquid crystal light modulation element according to claim 59, wherein

said substrate processing step includes a step of providing orientation control layers on the sides opposed to said liquid crystal layer of said paired substrate; and a rubbing processing step of effecting rubbing processing on at least one of the orientation control layers arranged on said opposite substrates, and said rubbing step is

performed to provide the orientation control layer rubbed at a rubbing density of 10 or less.

62. A liquid crystal light modulation element for performing light modulation by utilizing a focal conic state of liquid crystal molecules included in a liquid crystal layer held between a pair of substrates, wherein helical axes of the liquid crystal molecules in the focal conic state extend in regular directions within plane substantially parallel to a substrate surface.

63. A liquid crystal light modulation element according to claim 62, further comprising:

orientation regulating means for the liquid crystal molecules for orientating the helical axes of the liquid crystal molecules in the focal conic state in regular directions within a plane substantially parallel to the substrate surface.

64. A liquid crystal light modulation element according to claim 62, wherein

the helical axes of the liquid crystal molecules in the focal conic state are orientated in regular directions when a predetermined electric field is applied across the substrates.

65. A liquid crystal light modulation element according to claim 64, wherein

anisotropy is caused in directions of lines of electric force of said electric field for orientating the helical axes of the liquid crystal molecules in the focal conic state in regular directions.

66. A liquid crystal light modulation element according to claim 65, wherein

the anisotropy is caused in the directions of the equal potential lines of said electric field by a projected structure formed on at least one of said substrates.

67. A liquid crystal light modulation element according to claim 66, wherein

said projected structure has a rib-like form.

68. A liquid crystal light modulation element according to claim 66, wherein

said projected structure has a side surface inclined with respect to a direction of a substrate normal.

69. A liquid crystal light modulation element according to claim 66, wherein

an electrode is formed on a surface of each of said substrates, and said projected structure is formed on the electrode of at least one of the substrates.

70. A liquid crystal light modulation element according to claim 66, wherein

a height h of said projected structure and a gap d between said substrates satisfy a relationship of $d/20 < h < d/2$.

71. A liquid crystal light modulation element according to claim 66, wherein

a width W of said projected structure and a helical pitch p of the liquid crystal molecules satisfy a relationship of $p < W < 20p$.

72. A liquid crystal light modulation element according to claim 66, wherein

an arrangement pitch L of said projected structures and a helical pitch p of the liquid crystal molecules satisfy a relationship of $5p < L < 100p$.

73. A liquid crystal light modulation element according to claim 72, wherein

said arrangement pitch of said projected structures is

not uniform within a range satisfying said relationship.

74. A liquid crystal light modulation element according to claim 66, comprising:

a plurality of pixels arranged in a direction different from a direction of arrangement of said projected structures.

75. A liquid crystal light modulation element according to claim 66, comprising:

a plurality of regions which are different in a direction of arrangement of said projected structures.

76. A liquid crystal light modulation element according to claim 65, wherein

an electrode is formed on each of said substrates, and the anisotropy is caused in the directions of the lines of electric force of said electric field by a groove formed on the electrode on at least one of said substrates.

77. A liquid crystal light modulation element according to claim 76, wherein

a width W of said groove and a helical pitch p of the liquid crystal molecules satisfy a relationship of $p < W < 20p$.

78. A liquid crystal light modulation element according to claim 76, wherein

an arrangement pitch L of said grooves and a helical pitch p of the liquid crystal molecules satisfy a relationship of $5p < L < 100p$.

79. A liquid crystal light modulation element according to claim 78, wherein

said arrangement pitch L of said grooves is not uniform within a range satisfying said relationship.

80. A liquid crystal light modulation element according to claim 76, comprising:

a plurality of pixels arranged in a direction different from a direction of arrangement of said grooves.

81. A liquid crystal light modulation element according to claim 76, comprising:

a plurality of regions which are different in a direction of arrangement of said grooves.

82. A liquid crystal light modulation element according to claim 65, wherein

an insulating film is formed on at least one of the

substrates, and the anisotropy is caused in the directions of the lines of electric force of said electric field by a groove formed on said insulating film.

83. A liquid crystal light modulation element according to claim 82, wherein

a width W of said groove and a helical pitch p of the liquid crystal molecules satisfy a relationship of $p < W < 20p$.

84. A liquid crystal light modulation element according to claim 82, wherein

an arrangement pitch L of said grooves and a helical pitch p of the liquid crystal molecules satisfy a relationship of $5p < L < 100p$.

85. A liquid crystal light modulation element according to claim 84, wherein

said arrangement pitch L of said grooves is not uniform within a range satisfying said relationship.

86. A liquid crystal light modulation element according to claim 62, wherein

a region providing a different orientation regulating force is arranged partially on a surface of at least one of

the substrates in contact with the liquid crystal for orientating helical axes of the liquid crystal molecules in regular directions.

87. A liquid crystal light modulation element according to claim 86, wherein

an orientation film is arranged on the surface, in contact with the liquid crystal, of the substrate provided with said region.

88. A liquid crystal light modulation element according to claim 86, wherein

said region is formed by partially effecting rubbing.

89. A liquid crystal light modulation element according to claim 87, wherein

said region is formed by partially effecting rubbing.

90. A liquid crystal light modulation element according to claim 86, wherein

said region is formed by partially effecting light irradiation.

91. A liquid crystal light modulation element according to claim 87, wherein

said region is formed by partially effecting light irradiation.

92. A liquid crystal light modulation element according to claim 86, wherein

said region is formed by partially using a different material.

93. A liquid crystal light modulation element according to claim 86, wherein

a width W of said region of the different orientation regulating force and a helical pitch p of the liquid crystal molecules satisfy a relationship of $p < W < 20p$.

94. A liquid crystal light modulation element according to claim 86, wherein

an arrangement pitch L of said regions of the different orientation regulating force and a helical pitch p of the liquid crystal molecules satisfy a relationship of $5p < L < 100p$.

95. A liquid crystal light modulation element according to claim 94, wherein

said arrangement pitch L of said regions of the different orientation regulating force is not uniform

within a range satisfying said relationship.

96. A liquid crystal light modulation element according to claim 86, comprising:

a plurality of pixels arranged in a direction different from a direction of arrangement of said regions of the different orientation regulating force.

97. A liquid crystal light modulation element according to claim 86, comprising:

a plurality of regions which are different in a direction of arrangement of said regions of the different orientation regulating force.

98. A multilayer liquid crystal light modulation element comprising a plurality of liquid crystal light modulation elements stacked together in which the element according to claim 62 is included.

99. A multilayer liquid crystal light modulation element comprising the element according to claim 62 and an element stacked together with said element and containing liquid crystal molecules having helical axes extending irregularly in a plane substantially parallel to a substrate surface when being in the focal conic state.

100. A multilayer liquid crystal light modulation element according to claim 98, wherein

at least the element on the end of the front side is the element according to claim 62.

101. A liquid crystal light modulation element according to claim 99, wherein

at least the element on the end of the front side is the element according to claim 62.

102. A liquid crystal light modulation element according to claim 62, wherein

the liquid crystal exhibiting the focal conic state is liquid crystal exhibiting a cholesteric phase at a room temperature.

103. A liquid crystal light modulation element according to claim 102, wherein

the liquid crystal exhibiting the focal conic state is liquid crystal having positive dielectric anisotropy.

104. A liquid crystal light modulation element according to claim 62, wherein

display is performed by switching the liquid crystal

between the focal conic state and the planar state.

105. A liquid crystal light modulation element according to claim 104, wherein

the liquid crystal in the planar state has a peak of selective reflection in a visible wavelength range.

106. A multilayer liquid crystal light modulation element according to claim 98, wherein

the elements have different peak wavelengths of selective reflection, respectively.

107. A multilayer liquid crystal light modulation element according to claim 99, wherein

the elements have different peak wavelengths of selective reflection, respectively.

108. A multilayer liquid crystal light modulation element according to claim 98, comprising:

at least two liquid crystal layers having different optical rotation directions, respectively.

109. A multilayer liquid crystal light modulation element according to claim 99, comprising:

at least two liquid crystal layers having different

optical rotation directions, respectively.

110. A multilayer liquid crystal light modulation element according to claim 108, wherein

said liquid crystal layers having different optical rotation directions has a substantially equal peak wavelength of selective reflection.

111. A multilayer liquid crystal light modulation element according to claim 109, wherein

said liquid crystal layers having different optical rotation directions has a substantially equal peak wavelength of selective reflection.

112. A method of producing a liquid crystal light modulation element for performing light modulation by utilizing a focal conic state of liquid crystal molecules included in a liquid crystal layer held between a pair of substrates, comprising the steps of providing a projected structure for regularly orientating helical axes of the liquid crystal molecules in the focal conic state on at least one of the substrates; and a step of arranging the liquid crystal layer between the paired substrates including the substrate(s) provided with said projected structure.

113. A producing method according to claim 112, wherein said projected structure is formed by a photolithography.

114. A method of producing a liquid crystal light modulation element for performing light modulation by utilizing a focal conic state of liquid crystal molecules included in a liquid crystal layer held between a pair of substrates, comprising the steps of forming electrodes on the paired substrates, respectively; forming a groove on the electrode of at least one of the substrates for regularly orientating helical axes of the liquid crystal molecules in the focal conic state; and arranging the liquid crystal layer between the paired substrates including the substrate(s) provided with said groove.

115. A producing method according to claim 114, wherein said groove is formed by a photolithography.

116. A method of producing a liquid crystal light modulation element for performing light modulation by utilizing a focal conic state of liquid crystal molecules included in a liquid crystal layer held between a pair of substrates, comprising the steps of forming on at least one of the paired substrates an insulating film having a groove

for regularly orientating helical axes of the liquid crystal molecules in the focal conic state; and arranging the liquid crystal layer between the paired substrates including the substrate(s) provided with said insulating layer.

117. A producing method according to claim 116, wherein said groove is formed by a photolithography.

/ 118. A method of producing a liquid crystal light modulation element for performing light modulation by utilizing a focal conic state of liquid crystal molecules included in a liquid crystal layer held between a pair of substrates, comprising the steps of partially forming on a surface, in contact with the liquid crystal, of at least one of the substrates a region having a different orientation regulating force for regularly orientating helical axes of the liquid crystal molecules in the focal conic state; and arranging the liquid crystal layer between the paired substrates including the substrate(s) provided with said region having the partially different orientation regulating force.

119. A producing method according to claim 118, wherein said region having the different regulating force is formed by partially effecting rubbing.

120. A producing method according to claim 118, wherein said region having the different regulating force is formed by partially effecting light irradiation.

121. A producing method according to claim 118, wherein said step of forming said region having the different regulating force includes the steps of arranging a mask layer provided with an opening corresponding to said region on the substrate, effecting a surface treatment on the substrate through said opening, and removing said mask layer.

122. A producing method according to claim 118, wherein said region having the different regulating force is formed by forming an orientation film having a partially different kind of material.

123. A method of effecting orientation processing for controlling orientation of liquid crystal molecules on at least one of paired substrates used in a liquid crystal display element holding, between said paired substrate, a liquid crystal layer including a liquid crystal material exhibiting a cholesteric phase, comprising the steps of:

forming an orientation film on at least one of said

substrates;

arranging on said orientation film a mask having a plurality of openings of a predetermined arrangement pattern, or forming on said orientation film a resist pattern having a predetermined arrangement pattern; and

effecting said orientation processing on said orientation film through said mask or said resist pattern.

124. A method according to claim 123, wherein

said orientation processing of said orientation film is performed by rubbing.

125. A method according to claim 123, wherein

said orientation processing of said orientation film is performed by optical orientation processing.

126. A method according to claim 123, wherein

a plurality of electrodes are formed on said substrate, and a predetermined opening arrangement pattern of said mask or said resist pattern matches with the formation pattern of said plurality of electrodes.

127. A substrate used in a liquid crystal display element holding, between a pair of substrates, a liquid crystal layer including a liquid crystal material

exhibiting a cholesteric phase, and allowing production of the substrate by a method comprising the steps of:

forming an orientation film on a substrate;

arranging on said orientation film a mask having a plurality of openings of a predetermined arrangement pattern, or forming on said orientation film a resist pattern having a predetermined arrangement pattern; and

effecting an orientation processing on said orientation film through said mask or said resist pattern for controlling orientation of liquid crystal molecules in said liquid crystal layer.

128. A substrate according to claim 127, wherein said orientation processing of said orientation film is performed by rubbing.

129. A substrate according to claim 127, wherein said orientation processing of said orientation film is performed by optical orientation processing.

130. A substrate according to claim 127, wherein a plurality of electrodes are formed on said substrate, and a predetermined opening arrangement pattern of said mask or said resist pattern matches with the formation pattern of said plurality of electrodes.